



Version 2.1

*"Don't Pump Without Us"*



P15E11\_021

# BLACOH CAPABILITIES GUIDE

SENTRY • SENTINEL • SPILLSTOP • SERVICES

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# PUMPING SYSTEM DIAGRAM

## SPILLSTOP™ LEAK CONTAINMENT

Stops spills caused by pump  
diaphragm failure

## SENTINEL™ DIAPHRAGM SEALS

Protect & isolate system  
instrumentation

## SENTRY™ INLET STABILIZER

Extends life of all inlet  
system components

## SENTRY™ PULSATION DAMPENER

Removes up to 99% of  
system shock

## SENTINEL™ PRESSURE RELIEF VALVES

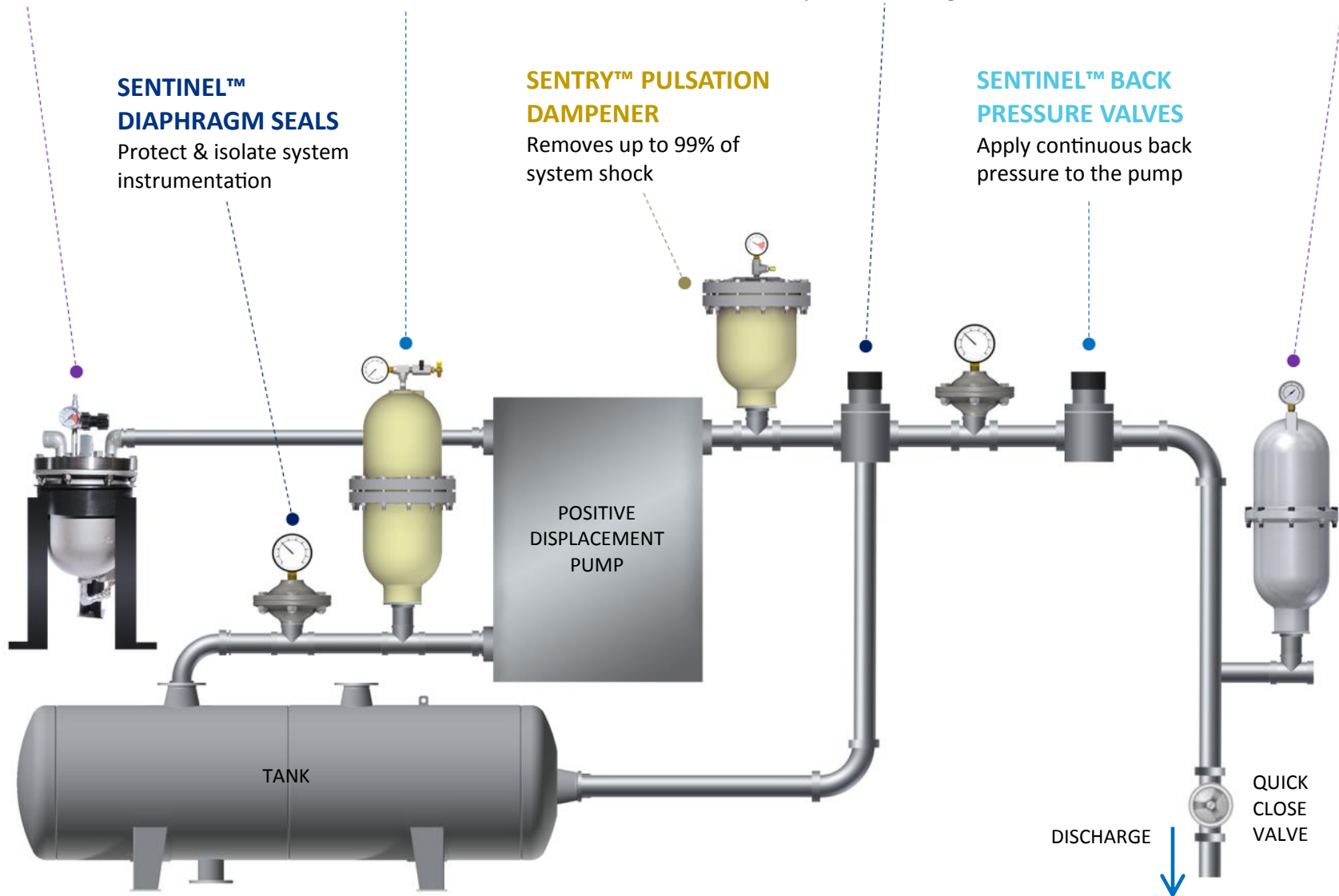
Protect system from  
over-pressure damage

## SENTINEL™ BACK PRESSURE VALVES

Apply continuous back  
pressure to the pump



## SENTRY™ SURGE SUPPRESSOR

Eliminates hydraulic surge  
& water hammer



4 in<sup>3</sup> (0.06 L)

# SENTRY III

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE PVC Santoprene Silicone (Food Grade) Viton	0.375" to 0.5" (10 to 15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	150 psi (10.3 bar)	Adjustable Chargeable	2 to 4 lbs (0.91 to 1.81 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.375" to 0.75" (10 to 20 mm)		1000 psi (68.9 bar)		4 to 6 lbs (1.81 to 2.72 kg)	



Plastic Series	Wetted / Non- Wetted
04PP	PP / PP
04PVC	PVC / PVC
04X	CPVC / CPVC
K1105	PVDF / PVDF
T1010	PTFE / PTFE
T1050	PTFE / PTFE

Metal Series	Wetted / Non- Wetted
1120	SS / SS
1170	A20 / A20
1175	A20 / SS
1185	HAST / SS
7325	SS / SS
8325	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

10 in<sup>3</sup> (0.16 L)



# SENTRY III

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Acetal Acetal - Conductive CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE PVC Santoprene Silicone (Food Grade) Viton	0.375" to 0.5" (10 to 15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	150 psi (10.3 bar)	Adjustable Chargeable Inlet Stabilizer	6 to 10 lbs (2.72 to 4.54 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.375" to 0.75" (10 to 20 mm)		1000 psi (68.9 bar)		14 to 18 lbs (6.35 to 8.16 kg)	

Plastic Series	Wetted / Non- Wetted	Metal Series	Wetted / Non- Wetted	Accessories
10PP 10PVC 10X D1000 DC1005 K1005 T1000 T1012	PP / PP PVC / PVC CPVC / CPVC Acetal / Acetal Acetal-Cond / Acetal-Cond PVDF / PVDF PTFE / PTFE PTFE / PTFE	1020 1070 1075 1080 1085 7320 8320	SS / SS A20 / A20 A20 / SS HAST / HAST HAST / SS SS / SS SSP / SSP	Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

8, 12, 24 in<sup>3</sup> (0.13, 0.20, 0.39 L)

# SENTRY XPA, XPX, XPH

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>XPA/XPX</b> 	Stainless Steel (SS) Duplex Stainless Steel (DSS)	Buna-N EPDM PTFE Viton	0.5" (15 mm)	Autoclave FNPT BSP ANSI Flange DN Flange RTJ Flange Socket Weld	XPA: 7500 psi (517.1 bar)  XPX: 15000 psi (1034.2 bar)	Chargeable Gauge Adaptor	XPA: 10-13 lbs (4.54 to 6.90 kg)  XPX: 44 lbs (20.0 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>XPH</b> 				HP Flow-Through	XPH: 7500 psi (517.1 bar)		XPH: 10-13 lbs (4.54 to 6.90 kg)	


Series	Size	Wetted / Non-Wetted
XPA_-08 / XPH_-08	8 in <sup>3</sup> / 0.13 L	SS / SS
XPX10-12	12 in <sup>3</sup> / 0.20 L	SS / SS
XPA_-12 / XPH_-12	12 in <sup>3</sup> / 0.20 L	SS / SS
XPA_-24 / XPH_-24	24 in <sup>3</sup> / 0.39 L	SS / SS

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

About
The XPH model's unique design allows it to effectively remove both hydraulic pulses and acoustic pulses. The flow-through inlet is specifically designed to remove high frequency pulses greater than 15 Hz. Residual pulsations of less than 1% can be achieved with the flow-through design versus a single inlet/outlet dampener. (See performance chart on p. 24)

12 in<sup>3</sup> (0.20 L)

# SENTRY Tef-Guard

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Metal</b> 	Stainless Steel (SS)	PTFE	0.5" (15 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld	2,000 psi (137.8 bar)	Chargeable	12 lbs (5.44 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing



Metal Series	Wetted / Non- Wetted
TG12SS	SS / SS

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD



36 in<sup>3</sup> (0.59 L)

# SENTRY II

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Acetal CPVC Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.5" to 1" (15 to 25 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	150 psi (10.3 bar)	Adjustable Automatic Chargeable	6 to 10 lbs (2.72 to 4.54 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.75" to 1.5" (20 to 40 mm)		1000 psi (68.9 bar)		14 to 18 lbs (6.35 to 8.16 kg)	

Plastic Series	Wetted / Non- Wetted
601	PTFE / PTFE
1301	PP / PP
1305	PP / PP
1311	PVC / PVC
1315	PVC / PVC
1341	CPVC / PVC
1401	PVDF / PP
1801	Acetal / PP



Metal Series	Wetted / Non- Wetted
3120	SS / SS
3124	SS / CS
3140	CS / CS
3174	A20 / CS
3175	A20 / SS
3185	HAST / SS
7225	SS / SS
8225	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD



85 in<sup>3</sup> (1.40 L)

# SENTRY II

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Acetal CPVC Polypropylene (PP) Polypropylene - Conductive PTFE PVC PVDF (to 250 psi)	Aflas Buna-N Buna-N (Food Grade) EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	0.5" to 1" (15 to 25 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	250 psi (17.2 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	7 to 9 lbs (3.18 to 4.08 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		0.75" to 1.5" (20 to 40 mm)		1000 psi (68.9 bar)		15 to 19 lbs (6.80 to 8.62 kg)	



Plastic Series	Wetted / Non- Wetted
301	PP / PP
305	PP / PP
311	PVC / PVC
321	PP- Cond / PP- Cond
331	CPVC / CPVC
401	PVDF / PP
421	PVDF / PVDF
651	PTFE / PTFE
661	PTFE / PTFE
801	Acetal / PP

Metal Series	Wetted / Non- Wetted
3020	SS / SS
3024	SS / CS
3040	CS / CS
3075	A20 / SS
3085	HAST / SS
7220	SS / SS
8220	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

175 in<sup>3</sup> (2.87 L)

# SENTRY I

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Noryl (non-wetted only) Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	1.5" to 2" (40 to 50 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	150 psi (10.3 bar)	Adjustable Automatic Chargeable	18 to 22 lbs (8.16 to 9.98 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		1.5" to 2.5" (40 to 70 mm)		1000 psi (68.9 bar)		34 to 37 lbs (15.42 to 16.78 kg)	



Plastic Series	Wetted / Non- Wetted
501	PTFE / PTFE
901	PP / Noryl
905	PP / Noryl
911	PVC / Noryl
915	PVC / Noryl
1201	PVDF / Noryl
1221	PVDF / PVDF

Metal Series	Wetted / Non- Wetted
2175	A20 / SS
2185	HAST / SS
2500	SS / Noryl
2520	SS / SS
2700	CS / Noryl
2720	CS / CS
7125	SS / SS
8125	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

370 in<sup>3</sup> (6.06 L)

# SENTRY I

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Polypropylene (PP) PTFE PVC PVDF	Aflas Buna-N EPDM Hypalon Neoprene PTFE Santoprene Silicone (Food Grade) Viton	1.5" to 2" (40 to 50 mm)	FNPT BSP ANSI Flange DN Flange Socket Weld Tri-Clamp	200 psi (13.7 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	24 to 27 lbs (10.80 to 12.25 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Alloy 20 (A20) Carbon Steel (CS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP)		2" to 2.5" (50 to 70 mm)		1000 psi (68.9 bar)		42 to 50 lbs (19.05 to 22.68 kg)	


Plastic Series	Wetted / Non- Wetted
101	PP / PP
105	PP / PP
111	PVC / PVC
115	PVC / PVC
201	PVDF / PP
221	PVDF / PVDF
551	PTFE / PTFE

Metal Series	Wetted / Non- Wetted
2075	A20 / SS
2085	HAST / SS
2400	SS / PP
2420	SS / SS
2425	SS / CS
2600	CS / PP
2620	CS / CS
7120	SS / SS
8121	SSP / SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

275 in<sup>3</sup> (4.50 L)




Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Metal</b>  	Stainless Steel – 30 RA Polished (SSP)	EPDM (Food Grade) Silicone (Pharma Grade)	2.5" (70 mm)	Tri-Clamp	150 psi (10.3 bar)	Adjustable Chargeable	8 to 10 lbs (3.63 to 4.54 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Metal Series	Non- Wetted
275	SSP

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

577 in<sup>3</sup> (9.46 L)

# SENTRY 2" AL



Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Metal</b> 	Aluminum (AL)	Buna-N EPDM Neoprene Viton	2" (50 mm)	FNPT BSP ANSI Flange DN Flange	150 psi (10.3 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	32 to 38 lbs (14.51 to 17.24 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Metal Series	Non- Wetted
577	AL / AL

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

1155 in<sup>3</sup> (18.9 L; 5 gallon)


# SENTRY IV

Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	Polypropylene (PP)	Buna-N EPDM Hypalon Neoprene PTFE Silicone (Food Grade) Viton	3" (80 mm)	ANSI Flange DN Flange Hammer Union Tri-Clamp NPTF	90 psi (6.2 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	33 to 36 lbs (14.97 to 16.33 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing
<b>Metal</b> 	Aluminum (AL) Alloy 20 (A20) Epoxy Coated Aluminum (ECAL) Carbon Steel (CS) Epoxy Coated Carbon Steel (ECCS) Hastelloy C (HAST) Stainless Steel (SS) Stainless Steel - 30 RA Polished (SSP) Duplex Stainless Steel (DSS)		3" to 6" (80 to 150 mm)		275 psi (18.9 bar)		72 to 82 lbs (32.66 to 37.19 kg)	

Plastic Series	Wetted / Non- Wetted	Metal Series	Wetted / Non- Wetted	Accessories
P4000	PP / PP	4000 4015 4020 4030 4040 4045 4046 4050 4060 4065 4070 4075 4080 4085 7420 8420	AL / AL ECAL/ ECAL SS / SS CS / AL CS / CS ECCS/ ECCS ECCS/ AL SS / AL SS / CS SS / ECCS A20 / A20 A20 / SS HAST / HAST HAST / SS SS / SS SSP / SSP	Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD

2310 in<sup>3</sup> (37.9 L; 10 gallon)

# SENTRY V



Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Air Control Type	Est. Shipping Weight	Certifications & Testing
 <p><b>Metal</b></p>	Carbon Steel (CS) Epoxy Coated Carbon Steel (ECCS) 316 Stainless Steel (SS) Duplex Stainless Steel (DSS)	Buna-N EPDM Hypalon Neoprene Silicone (Food Grade) Viton	3" to 6" (80 to 150 mm)	ANSI Flange DN Flange	275 psi (18.9 bar)	Adjustable Automatic Chargeable Inlet Stabilizer	145 to 155 lbs (65.77 to 70.31 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA CRN <a href="#">PED</a> ARRA 3.1 Cert. Material Cert. Cert. of Origin Hydrostatic Testing Dye Penetrant Test X-Ray/Radiography PMI Testing Bolt Tensile Testing Customer Specified Testing

Metal Series	Wetted / Non- Wetted
5040	CS / CS
5045	ECCS / ECCS
5420	SS / SS
5440	CS / CS
5445	ECCS / ECCS
5620	SS / SS

Accessories
Charging Kits Bladder Replacement Kits Hardware Replacement Kits Pressure Relief Valves Back Pressure Valves Gauge Guards Gauge Upgrades Spill Containment for AODD



# SENTINEL Gauge Guard / Diaphragm Seal



Series Material	Body Material	Bladder Material	Inlet Size	Inlet Type	Max Pressure	Est. Shipping Weight	Certifications & Testing
<b>Plastic</b> 	CPVC Polypropylene (PP) PVC PVDF	EPDM PTFE Viton	1/2" (12.7 mm)	FNPT BSP Socket Weld Union Fitting	200 psi (13.7 bar)	1-2 lbs (0.5 to 0.9 kg)	<a href="#">ATEX</a> <a href="#">NAFTA</a> PED ARRA 3.1 Cert. Material Cert. Cert. of Origin Customer Specified Testing
<b>Metal</b> 	Stainless Steel (SS)		1/2" (12.7 mm)		1000 psi (68.9 bar)	2-3 lbs (0.9 to 1.4 kg)	

Plastic Series	Wetted / Non- Wetted
GK RC RPVC RP	PVDF / PVDF CPVC / CPVC PVC / PVC PP / PP

Metal Series	Wetted / Non- Wetted
SS	SS / SS

About
SENTINEL Diaphragm Seals employ a chemically resistant diaphragm to effectively isolate process fluids from gauges and other process instrumentation. This durable diaphragm allows SENTINEL to accurately transfer process pressure without direct contact with hazardous or corrosive fluids.

# SPILLSTOP Leak Containment

Series Material	Body Material	Lid Material	Inlet Size	Inlet Type	Add On	Air Inlet	Est. Shipping Weight	Certifications & Testing
<b>Traditional</b> 	Hastelloy C (HAST) Polypropylene (PP) PVC PVDF Stainless Steel (SS)	Noryl PVDF Stainless Steel	3/4-1" (19-25 mm)	FNPT BSP	Whistle Electronic Switch	1/4" (6.4 mm)	25-55 lbs (11.3 to 25.0 kg)	<a href="#">ATEX</a> <a href="#">ISO 9001:2008</a> NAFTA ARRA 3.1 Cert. Material Cert. Cert. of Origin
<b>Electronic</b> 	Polypropylene (PP) PVC PVDF Stainless Steel (SS)	N/A	1/2" (12.7 mm)		Control Box Electronic Accessories	N/A	10-15 lbs (4.5 to 6.8 kg)	

Regular Series	Housing/Lid
SPS-10	PP / NORYL
SPS-11	PVC / NORYL
SPS-20	SS / NORYL
SPS-21	SS / SS
SPS-30	PVDF / NORYL
SPS-31	PVDF / PVDF
SPS-33	PVDF / PVDF
SPS-39	PVDF / NORYL
SPS-80	HAST / NORYL

Electronic Series	Housing
SPE-10	PP / PP
SPE-11	PVC / PVC
SPE-21	SS / SS
SPE-31	PVDF / PVDF

About
<p>The SPILLSTOP Leak Containment System attaches directly to the exhaust of an air operated diaphragm pump. When pump diaphragms fail, SPILLSTOP captures dangerous and/or expensive process fluid in an internal receptacle while raising a float switch to automatically shut down the pump. SPILLSTOP can also be configured to sound a warning alarm and/or initiate a backup pump switchover.</p>

## SENTINEL™ Pressure Relief Valve

SENTINEL Pressure Relief Valves protect pumping systems from over-pressure damage caused by defective equipment or a blockage in the system line. They consist of a spring and diaphragm that is pushed down on a seat to a preset adjustable pressure setting. Once the pressure is exceeded, the seat is lifted off the relief port and the excess fluid pressure flows back to a holding tank or the suction side of the pump. When the pressure is reduced, the spring pushes the seat back over the discharge port.



## SENTINEL™ Back Pressure Valve

SENTINEL Back Pressure Valves enhance system performance by applying a continuous back pressure to the pump. The diaphragm is held against the valve seat by an internal ring. When the valve's present pressure is exceeded, the diaphragm is forced up and system fluid flows through the valves to the injection point.



## SENTINEL™ Check Valve & Ball Valve

By preventing reverse flow, SENTINEL Check Valves and Ball Valves can be used as one-way valves, injection valves, or to prevent backflow. The internal ball or poppet functions as a positive shutoff to ensure process fluid does not go back up the line.



## TRACKING GAUGE

Attachable Tracking Gauge captures the maximum system pressure and spikes with the additional tracking needle. Options with pressure ratings 0-2000 PSI/BAR and a 4.5" gauge face.







## CHARGING KIT




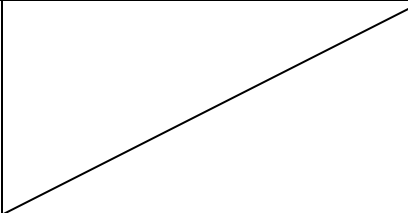




Charging Hose Kit for Blacoh CT, H, TG or XP models. Includes an 8' (2.4 m) length of hose with a 1/4" (6mm) NPT male fitting at one end for connection to a regulator at the Nitrogen source and a charging fitting and gauge on the opposite end.



# Air Control Types

TYPE	DESCRIPTION	MAX PRESSURE	INSTALLATION
<b>ADJUSTABLE</b> 	<ul style="list-style-type: none"> <li>-Mounted on single port</li> <li>-Self relieving regulator</li> <li>-Gauge and one-way check valve</li> <li>-Compressed air line must be permanently attached to the regulator</li> </ul>	150 psi (10.3 bar)	<ul style="list-style-type: none"> <li>-Within 10 pipe diameters of pump discharge</li> <li>-Connect to a constant source of air</li> <li>-Do NOT use oxygen</li> <li>-Charge dampener to 80% of operating pressure</li> <li>-Adjust dampener PSI to minimize pulse level</li> </ul>
<b>AUTOMATIC</b> 	<ul style="list-style-type: none"> <li>-Mounted on single port</li> <li>-Automatic valve assembly on center port</li> <li>-Gauge and one-way check valve</li> <li>-Automatically self adjusts as system pressure increases/decreases and resets when system restarts</li> </ul>	150 psi (10.3 bar)	<ul style="list-style-type: none"> <li>-Within 10 pipe diameters of pump discharge</li> <li>-Connect to a constant source of air</li> <li>-Do NOT use oxygen</li> <li>-Dampener gauge will read system pressure</li> <li>-No further adjustments are needed</li> </ul>
<b>CHARGEABLE</b> 	<ul style="list-style-type: none"> <li>-Gauge and charging valve</li> <li>-Leak-proof operation in corrosive environments</li> <li>-No permanent source of compressed gas</li> <li>-Manually bled or charged to required pressure</li> </ul>	10,000 psi (689.5 bar)	<ul style="list-style-type: none"> <li>-Within 10 pipe diameters of pump discharge</li> <li>-Charge to recommended percentage of system operating pressure with compressed air or clean dry nitrogen</li> <li>-Do NOT use oxygen</li> </ul>
<b>INLET STABILIZER</b> 	<ul style="list-style-type: none"> <li>-Adjustable for suction lift or positive inlet conditions</li> <li>-Consists of compound pressure gauge, a pressure/vacuum tight ball valve and a Venturi valve</li> </ul>	30 inHg (30 psi) (2.1 bar)	<ul style="list-style-type: none"> <li>-Within 10 pipe diameters of pump discharge</li> <li>-Use compressed air line and air chuck to pressurize or create a vacuum</li> <li>-Do NOT use oxygen</li> <li>-Vacuum charge to 5-7 inHg for suction lift or charge to 50% of static inlet pump pressure for flooded suction</li> </ul>

# Bladders & Bellows

CAPACITY	BLADDERS	PTFE BELLOWS
4 to 10 in <sup>3</sup> (0.06 to .16 L)		
8 in <sup>3</sup> (0.13 L)		
12 in <sup>3</sup> (0.20 L)		
		
24 in <sup>3</sup> (0.39 L)		
36 to 85 in <sup>3</sup> (0.59 to 1.40 L)		

CAPACITY	BLADDERS	PTFE BELLOWS
175 to 370 in <sup>3</sup> (2.87 to 6.06 L)		
275 in <sup>3</sup> (4.50 L)		
577 in <sup>3</sup> (9.46 L)		
1155 in <sup>3</sup> (5 gal) (18.93 L)		
2310 in <sup>3</sup> (10 gal) (37.85 L)		



# Bladders & Bellows

ELASTOMER MATERIALS	TEMPERATURE LIMITS	APPLICATIONS
Aflas	0°F to +400°F (-18°C to +204°C)	High temperature, petroleum based chemicals, strong acids and bases.
Buna	+10°F to +180°F (-12°C to +82°C)	Good flex life; use with petroleum, solvents and oil-based fluids.
FDA Buna	+10°F to +180°F (-12°C to +82°C)	FDA-approved food grade; similar characteristics of regular Buna.
EPDM	-60°F to +280°F (-51°C to +138°C)	Use in extreme cold; good chemical resistance with ketones, caustics.
Hypalon	-20°F to +275°F (-29°C to +135°C)	Excellent abrasion resistance; good in aggressive acid applications.
Neoprene	0°F to +200°F (-18°C to +93°C)	Good abrasion resistance and flex; use with moderate chemicals.
PTFE	-20°F to +220°F (-29°C to +104°C)	Bellows design; excellent flex life; use with highly aggressive fluids.
Santoprene	-20°F to +225°F (-29°C to +107°C)	Excellent choice as a low cost alternative for PTFE in many applications.
FDA Silicone	-20°F to +300°F (-29°C to +149°C)	FDA-approved food grade material; for use in food and pharmaceutical processing.
USP Class VI Silicone	-20°F to +300°F (-29°C to +149°C)	Pharmaceutical grade material; for use in food and pharmaceutical processing.
Viton®	-10°F to +350°F (-23°C to +177°C)	Use in hot and aggressive fluids; good with aromatics, solvents, acids and oils.

# TESTING & CERTIFICATIONS

TESTING & ENGINEERING	PARTS	PART NUMBER	NOTES
STANDARD UNIT TEST CERTIFICATION	ALL UNITS	DOC-TEST CERT	STANDARD BFC TEST PERFORMED ON ALL UNITS NO MODIFICATIONS TO TESTING PROCEDURE
HYDROSTATIC TEST & CERTIFICATE	ALL UNITS	DOC-HYDRO	STANDARD BFC FORMAT DOCUMENT
HYDROSTATIC TEST & CERTIFICATE – WITNESSED	ALL UNITS	DOC-HYDRO TEST- WITNESSED	CONSULT FACTORY FOR DETAILS
XRAY EXAM & DYE PENETRANT TEST	METAL UNITS	DOC-XRAYDYE	CONSULT FACTORY FOR DETAILS
DYE PENETRANT TEST	METAL UNITS	DOC-DYE	CONSULT FACTORY FOR DETAILS
XRAY/RADIOGRAPHY	METAL UNITS	DOC-XRAY	CONSULT FACTORY FOR DETAILS
POSITIVE MATERIAL INDENTIFICATION	ALL METAL HOUSINGS	DOC-PMI	CONSULT FACTORY FOR DETAILS
BOLT TENSILE TEST REPORT	BOLTS	DOC-BOLT	STANDARD BFC FORMAT DOCUMENT
GAUGE TESTING	GAUGES	DOC-GAUGE	STANDARD BFC FORMAT DOCUMENT
SPILLSTOP UNIT TESTING	SPILLSTOP	DOC-TEST-SS	STANDARD BFC FORMAT DOCUMENT
CUSTOMER OR THIRD PARTY INSPECTION		CONTACT FACTORY	CONSULT FACTORY FOR DETAILS
ASME CALCULATIONS		ASME CALC	CONSULT FACTORY FOR DETAILS

MATERIAL CERTIFICATION	PARTS	PART NUMBER	NOTES
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	SENTRY PRODUCT (NO LOT NUMBERS)	DOC-MC-SENTRY	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	SPILL STOP PRODUCT (NO LOT NUMBERS)	DOC-MC-SS	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	GAUGE GUARD PRODUCT (NO LOT NUMBERS)	DOC-MC-GG	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF CONFORMANCE TO PO	ALL ORDERS	DOC-COC	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	BLADDER	DOC-MCB	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED & NONWETTED HOUSING	DOC-MCWN	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED HOUSING & BLADDER	DOC-MCWB	STANDARD BFC FORMAT DOCUMENT
MATERIAL CERTIFICATION & CERTIFICATE OF CONFORMANCE	WETTED & NONWETTED HOUSING, BLADDER	DOC-MCWNB	STANDARD BFC FORMAT DOCUMENT
CERTIFICATION OF OIL FREE WETTED ASSEMBLY	WETTED HOUSING OF UNIT	DOC-OIL	STANDARD BFC FORMAT DOCUMENT
MILL TEST REPORT (MTR) CHEMICAL COMPOSITION & HEAT NUMBER	WETTED HOUSING - METAL ONLY	DOC-MTR-METAL-W	CHEMISTRY REPORT FROM FOUNDRY (NOT AVAILABLE ON ALL PRODUCT)
MILL TEST REPORT (MTR) CHEMICAL COMPOSITION & HEAT NUMBER	WETTED, NONWETTED HOUSING – METAL ONLY	DOC-MTR-METAL-WN	CHEMISTRY REPORT FROM FOUNDRY (NOT AVAILABLE ON ALL PRODUCT)
3.1 (EN10204) CERTIFICATION	WETTED HOUSING - METAL ONLY	DOC-CERT 3.1-W	CHEMISTRY REPORT FROM FOUNDRY (NOT AVAILABLE ON ALL PRODUCT)
3.1 (EN10204) CERTIFICATION	WETTED, NONWETTED HOUSING – METAL ONLY	DOC-CERT 3.1-WN	CHEMISTRY REPORT FROM FOUNDRY (NOT AVAILABLE ON ALL PRODUCT)
3.1 (EN10204) CERTIFICATION & HYDRO TESTING	SENTRY PRODUCTS	DOC-CERT 3.1H	CHEMISTRY REPORT FROM FOUNDRY & HYDRO TEST (NOT AVAILABLE ON ALL PRODUCT)
CE STATEMENT	VARIOUS	DOC-CE1	COMPLIANCE WITH PED CAT 1, GROUP 1 (NOT AVAILABLE ON ALL PRODUCT)
SILICONE FREE STATEMENT	ALL PRODUCTS	DOC-SILICONE	STANDARD BFC FORMAT DOCUMENT



# TESTING & CERTIFICATIONS

ORDER DOCUMENTATION	PARTS	PART NUMBER	NOTES
NAFTA CERTIFICATION	NORTH AMERICA ORDERS	DOC-NAFTA	
CERTIFICATION OF ORIGIN	ANY ITEM	DOC-COO	STANDARD BFC FORMAT DOCUMENT
CERT OF CONFORMANCE FOR ORDER	ANY ORDER	COC	STANDARD BFC FORMAT DOCUMENT
EC ATEX DECLARATION OF CONFORMITY	ALL ATEX UNITS	DOC-EC	STANDARD BFC FORMAT DOCUMENT
EC ATEX DECLARATION OF CONFORMITY IN GERMAN	ALL ATEX UNITS	DOC-EC-GR	STANDARD BFC FORMAT DOCUMENT
EC PED DECLARATION OF CONFORMITY	ALL PED UNITS	DOC-EC-PED	STANDARD BFC FORMAT DOCUMENT
EC WORK TEST CERTIFICATE	ALL PED UNITS	DOC-EC-WORK	STANDARD BFC FORMAT DOCUMENT
DOCUMENTATION-NON STANDARD-CUSTOMER SPECIFIED		DOC-CS	THIS IS A MINIMUM FEE. MAY VARY BY ORDER. CONSULT FACTORY.

CERTIFICATES OF ORIGIN	PARTS	PART NUMBER	NOTES
CERTIFICATE OF ARRA BUY AMERICAN ACT	ALL	DOC-ARRA	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF PRODUCTS MADE IN USA	ALL	DOC-COO-USA	STANDARD BFC FORMAT DOCUMENT
CERTIFICATE OF PRODUCTS MADE IN USA (FOR KOREA)	ALL - USE FOR KOREA ONLY	DOC-COO-USA-K	COMPLIANCE TO KOREA-USA FREE TRADE AGREEMENT-STANDARD BFC DOCUMENT
CERTIFICATE OF PRODUCTS MADE IN USA (FOR NIKKISO KOREA)	ALL - USE FOR NIKKISO KOREA ONLY	DOC-COO-USA-NIK	COMPLIANCE TO KOREA-USA FREE TRADE AGREEMENT-STANDARD BFC DOCUMENT

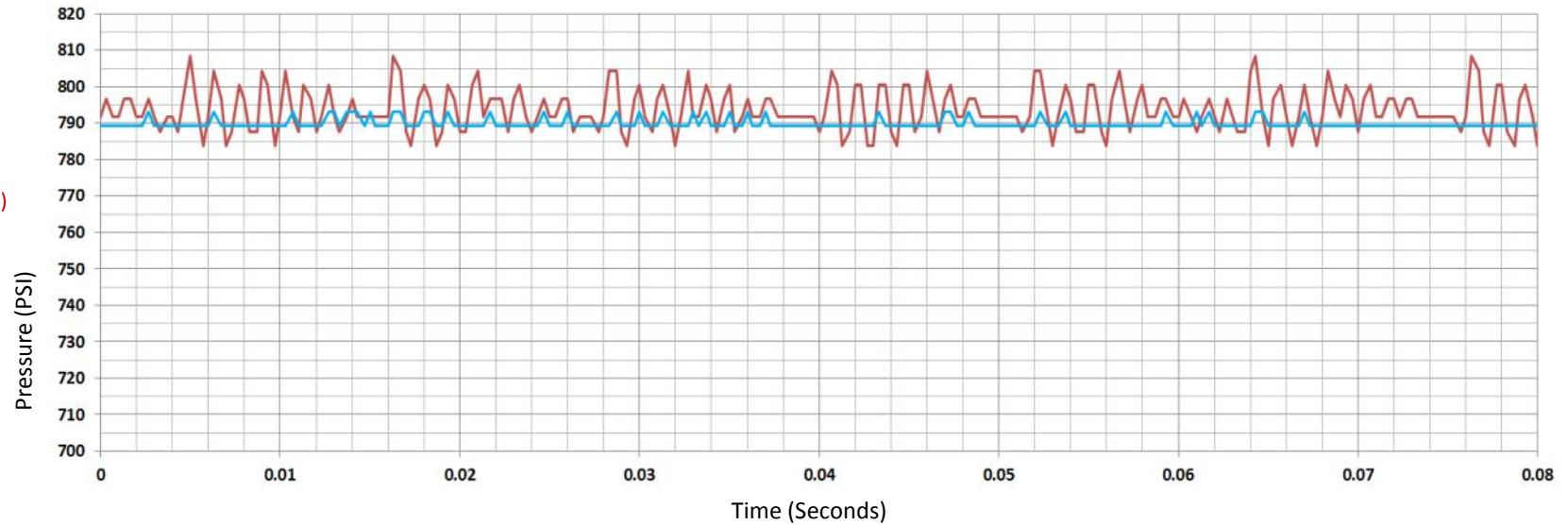
DRAWINGS	PARTS	PART NUMBER	NOTES
STANDARD PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	AVAILABLE AT WWW.BLACOH.COM
STANDARD CERTIFIED PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	SIGNED & DATED BY BLACOH ENGINEERING DEPT
SPECIAL CERTIFIED PRODUCT OUTLINE DRAWING	ALL UNITS	N/A	SIGNED & DATED BY BLACOH ENGINEERING DEPT

FEES	PARTS	PART NUMBER	NOTES
CUSTOMER SUPPLIED GAUGE MOUNTED ON PRODUCT		CSG	
FILLING OF GAUGE GUARD - 2" AND UNDER	GAUGE GUARDS	FILL	CAN BE ANY TYPE OF INSTRUMENTATION
FILLING OF GAUGE GUARD - 3" AND OVER	GAUGE GUARDS	FILL-3	CAN BE ANY TYPE OF INSTRUMENTATION
FILL, MINERAL OIL, 2" INSTRUMENTS AND UNDER	GAUGE GUARDS	FILL-M	CAN BE ANY TYPE OF INSTRUMENTATION
FILL, MINERAL OIL, 3" INSTRUMENTS AND OVER	GAUGE GUARDS	FILL-M	CAN BE ANY TYPE OF INSTRUMENTATION
LABOR		LABOR	PER HOUR
FILL FOR SPECIAL INSTRUMENTATION		FILL-SPECIAL	VARIES BY TYPE
PMT BY WIRE TRANSFER UNDER \$1,000		BANK	BANK FEE CHARGED FOR SMALL WIRES
DROP SHIP OUTSIDE THE UNITED STATES	ANY ORDER	DROP SHIP	THIS IS A MINIMUM FEE. MAY VARY BY ORDER. CONSULT FACTORY.
CANCELLATION FEE	ANY ORDER	CANCEL	

## Triplex Pump

With SENTRY XPH Dampener

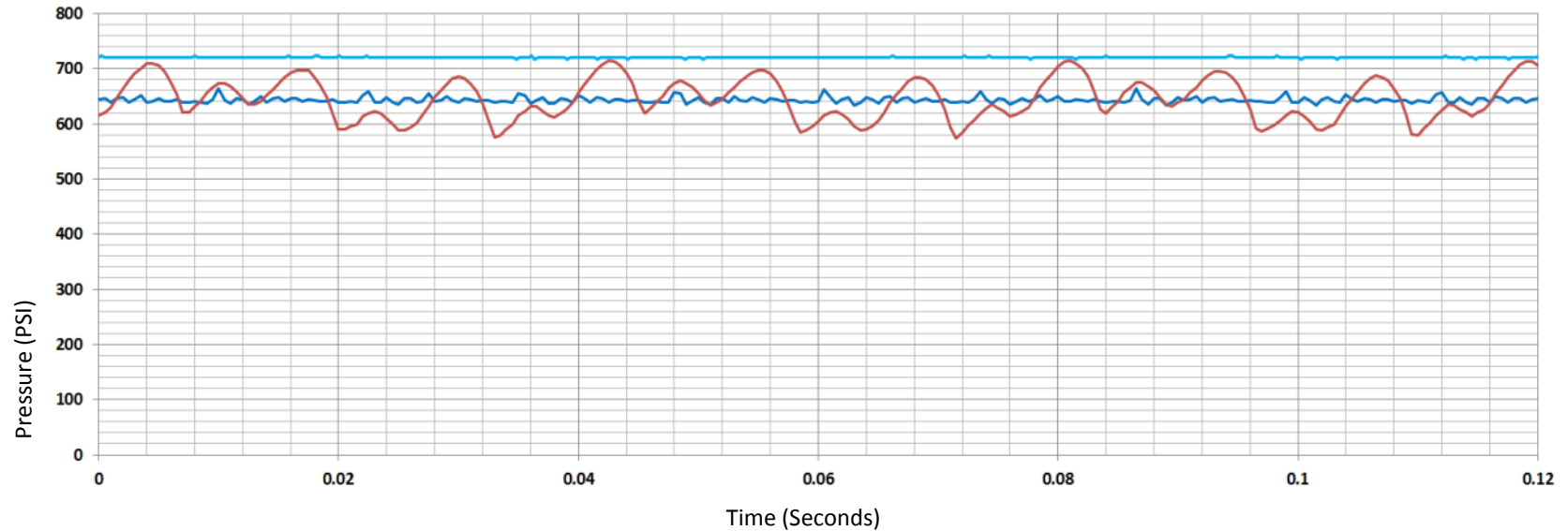
- **Without Dampener**  
(1715 rpm, 757 pulses/s)
- **With XPH Flow-Thru Dampener ( $\pm 4$  PSI)**



## Triplex Pump

With SENTRY XP Dampeners

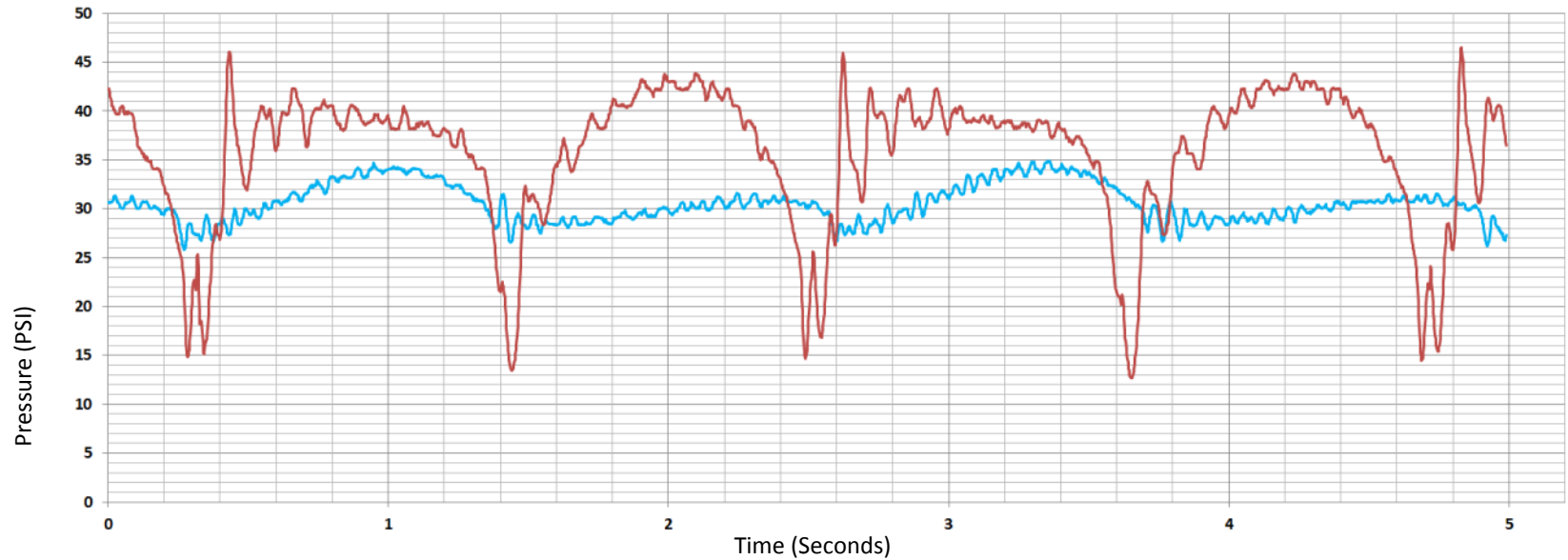
- **Without Dampener**
- **With XPA Dampener**
- **With XPH Flow-Thru Dampener**



## 2" AODD Pump

With SENTRY I Dampener

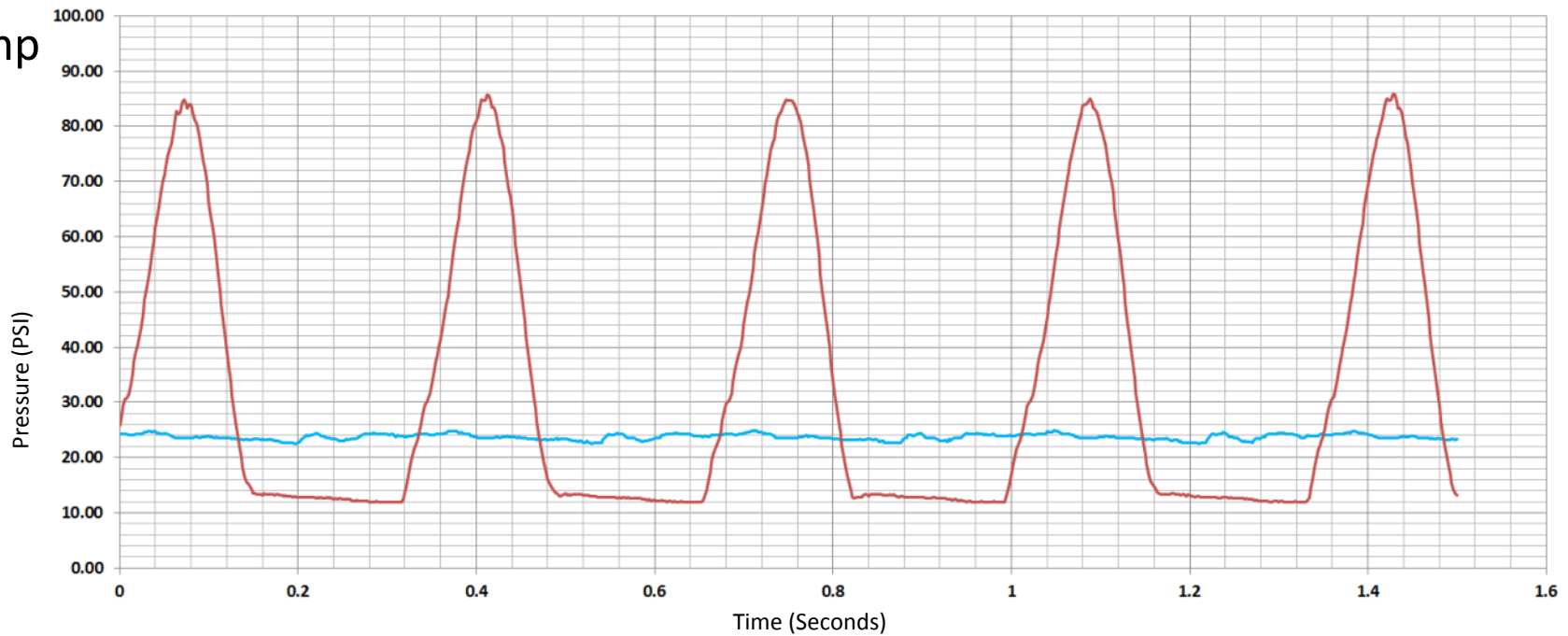
— Without Dampener  
— With Dampener



## 1" Metering Pump

With SENTRY II Dampener

— Without Dampener  
— With Dampener



## E-Configurator

- ✓ Build your dampener online, and get a CAD drawing to your specifications



## SpeedQuote

- ✓ A quick and easy way to request quotes online. Always available 24/7



## Drawings

- ✓ Engineering assistance and 3D drawings also available upon request
- ✓ Easy implementation into your system model



## Literature & Manuals

- ✓ Literature available in multiple languages
- ✓ Installation manuals in multiple languages
- ✓ Certifications



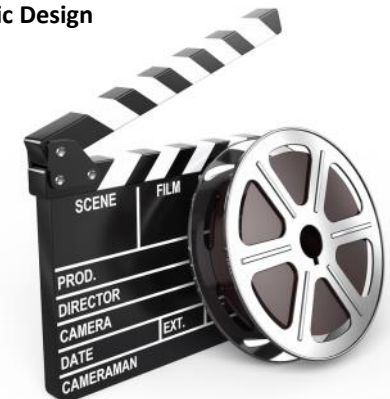
## Application Assistance

- ✓ Stories & Case Studies
- ✓ Training Videos
- ✓ Maintenance Videos



## Media Capabilities

- ✓ Blacoh TV
- ✓ Video Production
- ✓ Infotainment
- ✓ Graphic Design



BLACOH FLUID CONTROL  
*proudly introduces*



A complimentary new e-learning resource dedicated to the discovery, development, communication and application of knowledge relating to fluid control processes across a variety of industries.

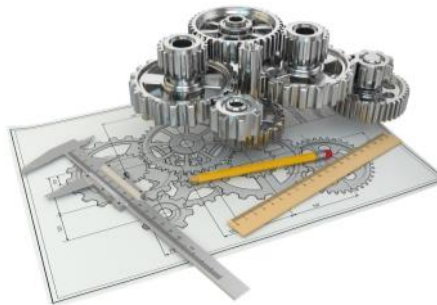
Enroll now at [BlacohU.com](http://BlacohU.com)



## Distributors

The newly designed distributor video courses provide convenient tutorials with excellent training resources on a variety of fluid control topics, such as pulsation dampening and application studies. Enhance your industry knowledge and ability to deliver fluid control solutions to end user and grow professionally.

- ✓ new series of learning videos
- ✓ take exams and earn certificates for each series
- ✓ documents and articles to read and download



## Engineers

Engineering professionals will experience convenient video tutorials designed to enhance professional development and problem solving skills in the discipline of fluid control dynamics. Course topics include acceleration head, surge analysis and water hammer.

- ✓ new lecture videos from industry experts
- ✓ earn free Professional Development Hours
- ✓ resources and articles to read and download



## Maintenance

Quickly and easily view video tutorials describing the how-to's of installation, maintenance and repair of Blacoh SENTRY pulsation dampeners, SENTINEL diaphragm seals & valves and SPILLSTOP leak containment systems. It is a great and convenient resource for maintenance professionals.

- ✓ assembly videos for each model
- ✓ quick links to installation & operation manuals
- ✓ product brochures by model

# CONVERSIONS & SIZING

## FLOW

Liter/Min x 0.26	=Gal/Min (US)
Gal/Min x 3.79	=Liter/Min
Lbs. of Water/Hr x 0.002	=Gal/Min (US)
Gal/Min x 500.7	=Lbs of Water/Hr
<u>Lbs of Fluid/Hr x 0.002</u>	=Gal/Min
Specific Gravity	
m <sup>3</sup> Hr x 4.40	=Gal/Min (US)
Gal/Min x 0.23	=m <sup>3</sup> / Hr
kg of water/Min x 0.26	=Gal/Min (US)
Gal/Min x 3.79	=kg of Water/Min

## VOLUME

Lbs. of Water x 0.12	=Gallon
Gallon (UK) x 1.20	=Gallon (US)
Gallon x 128	=Fluid Ounces
ft <sup>3</sup> x 7.48	=Gallon
in <sup>3</sup> x .0043	=Gallon
Gallon x 3.79	=Liters
Liter x 0.26	=Gallon
m <sup>3</sup> x 264.2	=Gallon
m <sup>3</sup> x 1000	=Liter
Liters x 1000	=cm <sup>3</sup>
cm <sup>3</sup> x 0.034	=Fluid Ounces
Fluid Ounces x 29.57	=cm <sup>3</sup>

## PRESSURE

Ft of Water x 0.43	=PSI
PSI x 2.31	=Ft of Water
Inches Hg x 0.49	=PSI
Inches Hg x 1.13	=Ft of Water
ATM x 14.69	=PSI
ATM x 33.9	=Ft of Water
Kg/ cm <sup>2</sup> x 14.22	=PSI
Meters of Water x 1.42	=PSI
ATM x 760.0	=mm Hg
mm Hg x .039	=Inches Hg
Bar x 14.5	=PSI
Newton/Meter <sup>2</sup>	=Pascal
PSI x 6.89	=kPa
kPa x 0.145	=PSI
PSI x 0.069	=Bar

## CERTIFICATES & TESTING

CRN
NAFTA
ATEX
NACE
3.1
PED COMPLIANCE
CERTIFICATE OF ORIGIN
ARRA COMPLIANCE
MATERIAL CERTS
TEST CERTS
DYE PENETRATION TESTING
X-RAY/ RADIOGRAPHY
BOLT TESTING

## PROBLEMS

## SOLUTIONS

Shaking Pipes	Blacoh Pulsation Dampener
PD Pump Pulsations	Blacoh Pulsation Dampener
System Damage Due To Pressure Spikes	Blacoh Surge Suppressor
Hydraulic Noise	Blacoh Surge Suppressor
Premature Pump (Component) Failure	Blacoh Dampener / Suppressor
Valves Leaking	Blacoh Dampener / Suppressor
Fittings Breaking	Blacoh Pulsation Dampener

## AODD SIZING

AODD PUMP PORT SIZE	SENTRY DAMPENER
1/4"	10 in <sup>3</sup> (0.16 L)
3/8"	10 in <sup>3</sup> (0.16 L)
1/2"	36 in <sup>3</sup> (0.59 L)
3/4"	85 in <sup>3</sup> (1.39 L)
1"	85 in <sup>3</sup> (1.39 L)
1.25"	175 in <sup>3</sup> (2.87 L)
1.50"	175 in <sup>3</sup> (2.87 L)
2"	370 in <sup>3</sup> (6.06 L)
3"	5 Gal (18.93 L)
4"	5 or 10 Gal (37.85 L)

## PERISTALTIC PUMP: 2 SHOE/ROLLER

PORT SIZE	GALLON PER REVOLUTION	LITER PER REVOLUTION	SENTRY DAMPENER
1/4" – 1/2"	0.001-0.010	0.0038 - 0.038	10 in <sup>3</sup> (0.16 L)
3/4"	0.011 - 0.025	0.041 - 0.950	36 in <sup>3</sup> (0.59 L)
1"	0.026 - 0.080	0.098 - 0.303	85 in <sup>3</sup> (1.39 L)
1.25"	0.081 - 0.390	0.306 - 1.476	175 in <sup>3</sup> (2.87 L)
2" - 2.5"	0.400 - 0.890	1.514 - 3.369	370 in <sup>3</sup> (6.06 L)
2"	0.400 - 0.890	1.514 - 3.369	577 in <sup>3</sup> (9.46 L)
3" - 4"	0.900- 3.100	3.407 - 11.74	5 Gal (18.93 L)
5" - 6"	3.110 - 6.000	11.77 - 22.71	10 Gal (37.85 L)